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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,350	03/26/2004	Gerald H. Negley	5308-394	1564
20792	7590	08/11/2006	EXAMINER	
MYERS BIGEL SIBLEY & SAJOVEC			NHU, DAVID	
PO BOX 37428			ART UNIT	
RALEIGH, NC 27627			PAPER NUMBER	
			2818	

DATE MAILED: 08/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/811,350

Applicant(s)

NEGLEY, GERALD H.

Examiner

David Nhu

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-56 is/are pending in the application.
- 4a) Of the above claim(s) 47-56 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.



## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 02.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTIONS**

### ***Election/Restrictions***

1. *Applicant's election of Group I (Claims 1-46) without traverse is acknowledge.*

Claims 1-46 are remained for examination. Accordingly, claims 47-56 are canceled/withdrawn from consideration as being directed to a non-elected invention.

See 37 CFR 1.142(b) and MPEP § 821.03.

### **Claims Objection**

2. Claim 5, "The method of claim 5" should be --The method of claim 1--

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 1-46 are rejected under 35 U.S.C. 102(e) as being anticipated by Gole et al (6,893,892 B2), and Andrews (6,885,033 B2).

**Regarding claim 1**, Andrews, (see figures 1-2), teaches a method of fabricating a light emitting device (LED) 10, 110 including a silicon carbide (SiC) substrate 20, 120 having first and second opposite surfaces 20a, 20b, 120a, 120b and a LED element 26, 126 on a first surface of the SiC substrate, comprising directly etching the second surface of the SiC substrate utilizing an aqueous etch to remove a damage portion of the SiC substrate resulting from processing of the SiC substrate.

**Regarding claim 10**, Gole, (see figures 3A-3K, 4A-4C, col.20, lines 30-67, col. 21. 22, lines 1-67), teaches a method of increasing light output of a light emitting device (LED), comprising etching a substrate of the LED using an aqueous etch (see col. 2, lines 50-67, col. 3, lines 1-67) to at least partially remove a light absorption region of the substrate of the LED.

**Regarding claim 24**, Gole, (see figures 3A-3K, 4A-4C, col.20, lines 30-67, col. 21. 22, lines 1-67), teaches a method of fabricating a light emitting device (LED), comprising etching a substrate of the LED using an aqueous etch and using etching parameters that are sufficient to increase an amount of light extracted through the substrate (see col. 2, lines 50-67, col. 3, lines 1-67).

**Regarding claim 38**, Andrews, (see figures 1,2 ), teaches a method of fabricating a light emitting device (LED) 10, 110, comprising etching a silicon carbide (SiC) substrate 20, 120 of the LED using an aqueous etch to at least portion of amorphous SiC from a surface of the SiC substrate.

Regarding claims 2-4, 6-9, Andrews, (see figures 1-5), teaches the damage portion of the second surface of the SiC substrate results from sawing/laser processing the substrate; the light emitting device (LED) from a wafer; etching a carbon/non-carbon faced surface of the SiC substrate; the carbon faced of the SiC substrate comprises a carbon faced of a sidewall of the SiC substrate; etching a surface oblique to the second surface of the SiC substrate.

Regarding claims 11-19, 23, Andrews, (see figures 1-50, teaches the light absorption region corresponding to a region of the substrate damaged by processing the substrate in the LED ; the region of the substrate damaged by processing substrate corresponding to laser; the

substrate is SiC substrate and a sapphire substrate; etching a substrate comprising a carbon/non-carbon face of the SiC substrate;

Regarding claims 21, 22, Gole, (see figures 3A-3K, col. 6, lines 1-14, col. 12, lines 9-25, col. 21, lines 1-67), teaches the aqueous etch is carried out for at least about 50 minutes; at temperature at least about 80 °C.

Regarding claims 39-43, 46, Andrews, (see figures 1-50, teaches the light absorption region corresponding to a region of the substrate damaged by processing the substrate in the LED ; the region of the substrate damaged by processing substrate corresponding to laser; the substrate is SiC substrate and a sapphire substrate; etching a substrate comprising a carbon/non-carbon face of the SiC substrate;

Regarding claims 44-45, Gole, (see figures 3A-3K, col. 6, lines 1-14, col. 12, lines 9-25, col. 21, lines 1-67), teaches the aqueous etch is carried out for at least about 50 minutes; at temperature at least about 80 °C.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 10, 24, 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Pearton (Wet and Dry Etching of SiC, 2002).

7. **Regarding claim 1**, Pearton, (see figures 4.3, 4.4, 4.5, pages 85-90), teaches a method of fabricating a light emitting device (LED) including a silicon carbide (SiC) substrate having first

and second opposite surfaces and a LED element on a first surface of the SiC substrate, comprising directly etching the second surface of the SiC substrate utilizing an aqueous etch to remove a damage portion of the SiC substrate resulting from processing of the SiC substrate (see figure 4.5).

**Regarding claim 10**, Pearton, (see figures 4.3, 4.4, 4.5, pages 85-90), teaches a method of increasing light output of a light emitting device (LED), comprising etching a substrate of the LED using an aqueous etch to at least partially remove a light absorption region of the substrate of the LED (see figures 4.3, 4.5, table 4.1).

**Regarding claim 24**, Pearton, (see figures 4.3, 4.4, 4.5, pages 85-90), teaches a method of fabricating a light emitting device (LED), comprising etching a substrate of the LED using an aqueous etch and using etching parameters that are sufficient to increase an amount of light extracted through the substrate (see figures 4.3, 4.5, table 4.1).

**Regarding claim 38**, Pearton, (see figures 4.3, 4.4, 4.5, pages 85-90), teaches a method of fabricating a light emitting device (LED), comprising etching a silicon carbide (SiC) substrate of the LED using an aqueous etch to at least portion of amorphous SiC from a surface of the SiC substrate of the (see figures 4.3, 4.5, table 4.1).

Claims 5, 20, 34, 43, Pearton (see table 4.1), teaches the aqueous etch comprises an etch with KOH.

### **Conclusion**

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Perry'175, is cited as of interest.

9. A shortened statutory period for response to this action is set to expired 3 (three) months

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and 0 (zero) day from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see 710.02 (b)).

10. Any inquiry concerning this communication on earlier communications from the examiner should be directed to David Nhu, (571)272-1792. The examiner can normally be reached on Monday-Friday from 7:30 AM to 5:00 PM.

*The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.*

*Information regarding the status of an application may be obtained from the patent application information retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).*

David Nhu 



August 3, 2006